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09/849,152	05/04/2001	Peter R. McCann	KLR: 1016.066	9708

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EXAMINER

BOUTSIKARIS, LEONIDAS

ART UNIT PAPER NUMBER

2872

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/849,152

Applicant(s)

MCCANN ET AL.

Examiner

Leo Boutsikaris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-54, 59-82 and 86 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-27, 37-45, 79 and 81 is/are allowed.
- 6) ☐ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☒ Claim(s) 3, 5, 12, 14, 32, 49, 51, 62, 64, 71 and 73 is/are objected to.
- 8) ☒ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/21; 10/19; 12/20/04
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

Continuation of Disposition of Claims: Claims rejected are 1,2,4,6-11,13,15-18,28-30,33-36,46-48,50,52-54,59-61,63,65-70,72,74-78,80,82 and 86.

## **DETAILED ACTION**

### ***Claim Objections***

Claim 28 is objected to because of the following informalities: the word "said" in line 9 should be deleted for better clarity.

Claims 29-36 inherit the deficiency of claim 28 from which they depend.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, 7-11, 13, 16-18, 28-30, 34-36, 59-61, 63, 66-70, 72, 74-76 are rejected under 35 U.S.C. 102(b) as being anticipated by Rumbaugh (US 5,101,453).

Regarding claims 1, 7, Rumbaugh discloses a fiber optic probe comprising:

a probe body 10 having a tip 12 for selectively approaching a device 40 under test;

an elongate optical fiber 16 extending longitudinally along the probe body and extending beyond the tip (see section 16a of the optical fiber); wherein

the probe body is sized such that a major portion of the optical fiber is precluded from moving freely with respect to the body due the concerted restrictive action of the channel 20, and

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the cover 22 (Fig. 5, lines 25-46, col. 2, and lines 7-27, col. 3). The claim language does not define the term “freely moving” with any degree of specificity, and hence the restrictive action of the cover and the narrow channel can be considered as preventing the optical fiber from “freely moving” with respect to the probe body.

Regarding claim 2, the probe body has a first terminal portion proximate the tip 12 having a first cross sectional area, a second terminal portion proximate the opposing end of the probe from the tip having a second cross sectional area, and an intermediate portion located generally midway between the first terminal portion and the second terminal portion having a third cross sectional area, the first and third cross sectional areas being smaller than the second cross sectional area (Fig. 5).

Regarding claim 4, the optical fiber 16 is loosely positioned inside the probe body, hence it is longitudinally adjustable with respect to the probe body.

Regarding claim 8, a major portion of the probe body (excluding the area close to the tip) has a substantially constant vertical profile (see lined area in Fig. 5).

Regarding claim 9, the probe body defines a cavity through which the optical fiber extends, wherein a major portion of the cavity closely surrounds the optical fiber (see Fig. 5).

Regarding claims 10-11, 13, 16-18, there exists a cross sectional area immediately surrounding the optical fiber which is smaller in the area close to the tip rather than in some point in the middle of the probe (the area in the opposing end opposite to the tip is clearly larger), since the claim language does not define ‘area immediately surrounding said optical fiber’ with any degree of specificity.

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Regarding claims 28-30, 34-36, the elongate optical fiber is longitudinal adjustable with respect to the body, with the length of the optical fiber extending beyond the tip being extendable without removing the optical fiber from the probe body, since the optical fiber can be guided loosely inside the channel of the probe body towards the probe tip, wherein the length of the portion of the optical fiber extending beyond the tip 12 is changeable (for example when the optical fiber presses on the test surface causing some retraction of the optical fiber longitudinally along the probe body accompanied by bending at region 16b), see lines 25-46, col. 2, and lines 7-27, col. 3).

Regarding claims 59-61, 63, 66-67, substantially all of the probe body (excluding the small area of the tip) has substantially constant vertical tip.

Regarding claims 68-70, 72, 74-76, a major portion of the cavity closely surrounds the optical fiber around the entire periphery of the fiber, since the term "closely" has not been defined with any degree of specificity.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 15, 33, 46-48, 50, 52-54, 65, 77-78, 80, 82, 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rumbaugh (US 5,101,453) in view of Costella (US 4,696,544).

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Rumbaugh discloses all the limitations of the above claims except for teaching that the probe body is made from a material that is readily bendable, so that the angle of the probe tip with respect to the probe body changes. Costella discloses a flexible optic fiber probe (Fig. 1) where the probe body 20 is bendable so that the angle of the tip 16 with respect to the probe body changes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the probe body of Rumbaugh's probe flexible, for performing inspection of a test surface which is located in the interior of a structure at a point which is hard to reach (lines 22-31, col. 2 in Costella).

*Allowable Subject Matter*

Claims 3, 5, 12, 14, 31-32, 49, 51, 62, 64, 71, 73 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and if claims 31-32 overcome the objections as set forth supra.

Claims 19-27, 37-45, 79, 81 are allowed.

Claims 3, 5, 12, 14, 19-27, 31-32, 37-45, 49, 51, 62, 64, 71, 73, 79, 81 are allowable over the prior art of record for at least the reason that even though the prior art discloses optical fiber probes wherein the optical fiber is disposed within the probe body loosely and it has a portion extending from the tip of the probe body, the prior art fails to teach or reasonably suggest, regarding claims 3, 12, 19-27, 31, 49, 62, 71, 79, a fiber optic probe, wherein the probe body proximate the tip has an inner material closely surrounding the elongate optical fiber and also another layer surrounding said inner material, with the inner material having a greater tendency

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to maintain its cross sectional area while being flexed up to approximately 90 degrees than said another layer while being flexed, when said another layer is free from said inner layer of material, and regarding claims 5, 14, 32, 37-45, 51, 64, 73, 81, a fiber optic probe including a support for selectively maintaining the optical fiber from freely moving longitudinally with respect to the probe body, as set forth by the claimed combination.

### *Response to Arguments*

Applicant's arguments with respect to reference Clyne (US 6,071,009) have been considered and have been found persuasive.

Regarding Applicant's argument that the cross area around the tip is the same as the cross area in an intermediate portion of the probe body, the examiner notes that the term "immediately surrounding [the] optical fiber" has not been specified with any degree of specificity, hence since the optical fiber is loosely positioned inside the probe body, there is a cross area surrounding the optical fiber in the tip area which is less than a cross area surrounding the optical fiber in an intermediate portion of the probe body.

Regarding Applicant's argument that in Rumbaugh's fiber probe, the length of the optical fiber beyond the tip is not modified when the optical fiber is longitudinally adjustable, the examiner respectfully disagrees and notes that when the optical fiber 16 is pressed against the test surface, the optical fiber retracts towards the interior of the probe body, resulting in the bending portion 16b (see lines 13-23, col. 3, Fig. 5).



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Regarding Applicant's argument that Rumbaugh's probe body does not have substantially constant vertical profile, it is noted that the probe body has the same vertical profile over its whole length, except the (small in relation to the rest of the body) portion of the tip.

Finally, regarding Applicant's argument that in Rumbaugh's fiber probe, the cavity holding the optical fiber does not closely surround the optical fiber around the entire periphery of the fiber, the examiner respectfully disagrees and notes that since the term "closely" has not been specified with any degree of specificity, it can be said that the interior of the channel is closely proximate to the entire surface of the enclosed optical fiber.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo Boutsikaris, Ph.D.  
Primary patent Examiner, AU 2872  
January 18, 2005

